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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,259	09/10/2003	Hitoshi Sato	953.1010	4011

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EXAMINER	
TRAN, DIEM T	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/658,259	SATO ET AL.	
	Examiner	Art Unit	
	Diem Tran	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *RCE filed on 4/24/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the RCE filed on 4/24/06. In the amendment, claims 1, 5 have been amended, claim 6 has been canceled and claims 7-9 have been added. Overall, claims 1-5, 7-9 are pending in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 8, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oki et al. (JP 2002- 180816).

Regarding claims 1, 8, 9, Oki discloses an internal combustion engine exhaust gas purifying system having a continuous regenerating diesel particulate filter system in an exhaust passage of an internal combustion engine to oxidize and remove collected particulate matter by performing a regenerating-mode operation when a quantity of the collected particulate matter in a filter of the filter system to collect the particulate matter is equal to a predetermined judgment value for regeneration, comprising:

collected-quantity estimation means for estimating the quantity of the collected particulate matter in the filter (see pages 2, 3, par. [0016, 0017]); and controlling a fuel injection quantity of the internal combustion engine when the quantity of the collected particulate matter in the filter is equal to a first predetermined judgment value to rise the exhaust temperature to the

first predetermined temperature (see page 2, par. [0011]) not during the regenerating-mode operation, said first predetermined judgment value being smaller than said predetermined judgment value for regeneration (see translation, page 2, par. [0012-0014]); however, fails to specifically disclose restricting a maximum fuel injection quantity of the internal combustion engine when the quantity of the collected particulate matter is equal to a predetermined judgment value for restriction.

It would be obvious for one having ordinary skill in the art, to realize that increasing the filter temperature to a first predetermined temperature (T_1=500°C) needs a fuel injection quantity less than that needed to increase the exhaust gas temperature to a higher temperature (T_2=700°C) Therefore, Oki restricts a maximum fuel injection quantity of the internal combustion engine when the quantity of the collected particulate matter is equal to a first predetermined judgment value and the filter temperature is increased to a first predetermined temperature.

Regarding claim 2, the modified Oki system discloses all the claimed limitations as discussed in claim 1 above, however, fails to disclose indicating restriction of the maximum fuel injection quantity of the internal combustion engine when or while restricting the maximum fuel injection quantity.

With regard to the notification of driver when a maximum fuel injection quantity is restricted, this would have been obvious to one having ordinary skill in the art in that when such condition exists in an engine, the engine condition is routinely sent to the driver via alarms or buzzers just as in other engine conditions such as low on oil, engine overheating, etc.

Regarding claim 4, Oki further discloses that the continuous regenerating diesel particulate filter system uses a system constituted by making the filter carrying a catalyst (see abstract).

Claims 3, 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oki et al. (JP 2002-180816) in view of Sato et al. (US Patent 4,535,588).

Regarding claim 3, the modified Oki system discloses all the claimed limitations as discussed in claim 1 above, however, fails to disclose estimating the quantity of collected particulate matter in accordance with a differential pressure between the upstream and downstream of the filter. Sato teaches that it is conventional in the art, to estimate the quantity of collected particulate matter in accordance with the differential pressure between the upstream and downstream of the filter (se col. 5, lines 20-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Sato in the modified Oki system, since the use thereof would have provided an effective means for initiating the regeneration of the filter.

Regarding claims 5, 7, Oki discloses a method of purifying an internal combustion engine, comprising:

oxidizing and removing particulate matter collected in a filter in the engine when particulate matter collected in the filter is equal to a first judgment value (see page 2, par. [0014]); estimating a quantity of the collected particulate matter (see page 2, par. [0016]); and controlling a fuel injection quantity of the internal combustion engine when the quantity is equal to a second judgment value to rise the exhaust gas temperature to a first predetermined

temperature, wherein the oxidizing and removing are performed independently from the controlling of the fuel injection quantity, said second judgment value being smaller than said first judgment value (see page 2, par. [0011,0012, 0014,0016]); however, fails to disclose restricting a maximum fuel injection quantity of the internal combustion engine when the quantity of the collected particulate matter is equal to a second judgment value, and estimating the quantity of collected particulate matter in accordance with a differential pressure between the upstream and downstream of the filter. Sato teaches that it is conventional in the art, to estimate the quantity of collected particulate matter in accordance with the differential pressure between the upstream and downstream of the filter (se col. 5, lines 20-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Sato in the Oki system, since the use thereof would have provided an effective means for initiating the regeneration of the filter.

It would be obvious for one having ordinary skill in the art, to realize that increasing the filter temperature to a first predetermined temperature (T_1=500°C) needs a fuel injection quantity less than that needed to increase the exhaust gas temperature to a higher temperature (T_2=700°C) Therefore, Oki restricts a maximum fuel injection quantity of the internal combustion engine when the quantity of the collected particulate matter is equal to a first predetermined judgment value and the filter temperature is increased to a first predetermined temperature.

Conclusion

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner

can normally be reached on Monday -Friday from 8:30 a.m.- 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Diem Tran
Patent Examiner
Art unit 3748

DT
July 7, 2006

THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700